

Notice of Allowability

Application No.

10/707,422

Examiner

Allen C. Ho

Applicant(s)

SHEN ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed on 11 May 2007.
2. ☒ The allowed claim(s) is/are 1,5-12,16-19,24,25,27,28 and 30.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Allowable Subject Matter

1. Claims 1, 5-12, 16-19, 24, 25, 27, 28, and 30 are allowed.
2. The following is a statement of reasons for the indication of allowable subject matter:

With regard to claims 1 and 5, the prior art discloses a focal spot sensing device that comprises: a housing that resists x-ray beams; a sensor device disposed in the housing, wherein the sensor device includes at least three detector elements, wherein a first and a second of the at least three detector elements are arranged next to each other and are aligned with a first axis parallel to the plane of the sensor device, and the first and a third of the at least three detector elements are arranged next to each other and are aligned with a second axis parallel to the plane of the sensor device, the second axis being perpendicular to the first axis. However, the prior art fails to disclose an opening disposed in a wall of the housing that allows an x-ray beam to enter the housing, wherein the opening and the at least three detector elements are disposed such that the x-ray beam passing through the opening is allowed to strike more than two of the at least three detector elements, but only on just a portion of each of the at least three detector elements, the portion being less than 100% of a sensitive area of an associated detector element as claimed.

With regard to claims 6-11, the prior art discloses a focal spot sensing device that comprises: a housing that resists x-ray beams; a sensor device disposed in the housing, wherein the sensor device includes at least one detector element. However, the prior art fails to disclose an opening disposed in a wall of the housing that allows an x-ray beam to enter the housing, wherein the opening is dimensioned to be approximately a pinhole, and wherein the opening and

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the at least one detector element are disposed such that the x-ray beam passing through the opening is allowed to strike only a portion of the at least one detector element, the portion being less than 100% of a sensitive area of the at least one detector element as claimed.

With regard to claims 12 and 16-19, the prior art discloses a focal spot sensing device that comprises: a housing that resists x-ray beams; a first means including at least two detector elements, wherein the first means is aligned with a first axis; a second means including at least two detector elements, wherein the second means is aligned with a second axis perpendicular to the first axis. However, the prior art fails to disclose an opening disposed in the housing that allows an x-ray beam to enter the housing, wherein the opening is sized so that the x-ray beam strikes more than one of the at least two detector elements of each means, but only a portion of each detector element, the portion being less than 100% of a sensitive area of an associated detector element as claimed.

With regard to claims 24 and 25, the prior art discloses an imaging system that comprises: an x-ray source that produces an x-ray beam and has a focal spot; a detector array including a focal spot sensing device, the focal spot sensing device includes a housing that resists x-ray beams and a sensor device disposed in the housing, wherein the sensor device includes at least one detector element. However, the prior art fails to disclose an opening disposed in a wall of the housing, wherein the opening is dimensioned to be approximately a pinhole, and wherein the opening is sized so that the x-ray beam strike only a portion of the at least one detector element, the portion being less than 100% of a sensitive area of the at least one detector element as claimed.

With regard to claims 27, 28, and 30, the prior art fails to disclose a method for sensing a focal spot, the method comprises: receiving the x-ray beam at the sensor device disposed in the focal spot sensing device, wherein the sensor device includes at least three detector elements arranged on two orthogonal axes such that the x-ray beam passing through the opening is allowed to strike more than two of the at least three detector elements, but only a portion of each, the portion being less than 100% of a sensitive area of an associated detector element; and calculating a position in two dimensions of the focal spot in response to an area of the x-ray beam allowed to fall on the sensor device changing in both position and size at the sensor device in response to movement of the focal spot in a plane parallel to the plane of the sensor device as claimed.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Deuringer *et al.* (U. S. Pub. No. 2005/0265521 A1) disclosed a focal spot sensing device that comprises a housing (16), an opening (10), and a sensor device (12).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 9:00 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick, can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Allen C. Ho/
Primary Examiner
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23 May 2007